

The Honorable Barbara J. Rothstein

IN THE UNITED STATES DISTRICT COURT  
FOR THE WESTERN DISTRICT OF WASHINGTON  
AT SEATTLE

TELEBUYER, LLC,  
  
Plaintiff,

v.

AMAZON.COM, INC., AMAZON WEB  
SERVICES LLC, and VADATA, INC.,  
  
Defendants.

AMAZON.COM, INC., AMAZON WEB  
SERVICES LLC, and VADATA, INC.,  
  
Counterclaimants,

v.

TELEBUYER, LLC,  
  
Counterclaim-  
Defendant.

Case No. 2:13-cv-01677-BJR

**AMAZON’S SUBMISSION OF A  
TECHNICAL ADVISOR CANDIDATE  
IN RESPONSE TO COURT’S OCTO-  
BER 16, 2014 ORDER**

1 Amazon and Telebuyer were unable to agree on a technical advisor candidate. Thus, pur-  
2 suant to the Court's October 16 Order (D.I. 165, at 11), Amazon submits the following name as a  
3 candidate for Technical Advisor:

4 Professor Scott Shenker  
5 University of California, Berkeley  
6 Professor of Computer Science  
7 415 Soda Hall  
8 Berkeley, CA 94720  
9 Phone: (510) 643-3043  
10 Email: shenker@icsi.berkeley.edu  
11

12 Amazon has not contacted Professor Shenker even to determine whether he is available  
13 to serve as the Technical Advisor in this case. Consequently, to the extent the Court seeks the  
14 assistance of Professor Shenker but he is unable to serve for any reason, Amazon respectfully  
15 requests the opportunity to recommend another Technical Advisor to the Court. Professor Shen-  
16 ker does not list his *curriculum vitae* on his UC Berkeley website, and so Amazon has simply  
17 reproduced Professor Shenker's biographical information listed on that website as Exhibit A  
18 hereto.

19 Amazon does not object to the terms and conditions the Court set forth for the Technical  
20 Advisor in its October 16 Order.  
21  
22  
23  
24  
25  
26  
27

1 October 23, 2014

Respectfully submitted,

2 FENWICK & WEST LLP

3  
4 By: s/ Brian D. Buckley

5 Brian D. Buckley, WSBA No. 26423  
6 Ewa M. Davison, WSBA No. 39524  
7 1191 Second Avenue, 10th Floor  
8 Seattle, Washington 98101  
9 Phone: (206) 389-4510  
Fax: (206) 389-4511  
Email: bbuckley@fenwick.com  
edavison@fenwick.com

10 *Of Counsel:*

Counsel for Defendants  
11 AMAZON.COM, INC., AMAZON WEB  
SERVICES LLC, and VADATA, INC.

12 By: s/ Richard G. Frenkel

13 Matthew J. Moore (*pro hac vice*)  
14 matthew.moore@lw.com  
LATHAM & WATKINS LLP  
555 Eleventh Street, NW, Suite 1000  
15 Washington, D.C. 20004-1304  
Telephone: (202) 637-2200  
16 Facsimile: (202) 637-2201

17 Douglas E. Lumish (*pro hac vice*)  
18 doug.lumish@lw.com

19 Richard G. Frenkel (*pro hac vice*)  
rick.frenkel@lw.com

20 Gabriel S. Gross (*pro hac vice*)  
gabe.gross@lw.com

21 Patricia Young (*pro hac vice*)  
patricia.young@lw.com

22 Eugene Chiu (*pro hac vice*)  
eugene.chiu@lw.com

23 LATHAM & WATKINS LLP  
140 Scott Drive

24 Menlo Park, California 94025-1008

25 Telephone: (650) 328-4600

26 Facsimile: (650) 463-2600  
27

**CERTIFICATE OF SERVICE**

I, Richard G. Frenkel, hereby certify that on October 23, 2014, I caused the foregoing **AMAZON'S SUBMISSION OF A TECHNICAL ADVISOR CANDIDATE IN RESPONSE TO COURT'S OCTOBER 16, 2014 ORDER** to be served on the following parties as indicated below:

<b>Jeremy E. Roller</b> <b>Diana S. Breaux</b> YARMUTH WILSDON PLLC 818 Stewart Street, Suite 1400 Seattle, WA 98101  <i>Attorneys for Plaintiff Telebuyer LLC</i>	<input type="checkbox"/> By United States Mail <input type="checkbox"/> By Legal Messenger <input checked="" type="checkbox"/> <b>By Electronic CM/ECF</b> <input type="checkbox"/> By Overnight Express Mail <input type="checkbox"/> By Facsimile <input type="checkbox"/> By Email [by agreement of counsel] jroller@yarmuth.com dbreaux@yarmuth.com
<b>Brian M. Berliner</b> <b>Mark Alan Samuels</b> <b>Xin-Yi Zhou</b> O'MELVENY & MYERS LLP 400 S. Hope Street, Suite 1050 Los Angeles, CA 90071-2899  <i>Attorneys for Plaintiff Telebuyer LLC</i>	<input type="checkbox"/> By United States Mail <input type="checkbox"/> By Legal Messenger <input checked="" type="checkbox"/> <b>By Electronic CM/ECF</b> <input type="checkbox"/> By Overnight Express Mail <input type="checkbox"/> By Facsimile <input type="checkbox"/> By Email [by agreement of counsel] bberliner@omm.com msamuels@omm.com vzhou@omm.com
<b>Marc Pensabene</b> O'MELVENY & MYERS LLP Times Square Tower 7 Times Square New York, NY 10036  <i>Attorneys for Plaintiff Telebuyer LLC</i>	<input type="checkbox"/> By United States Mail <input type="checkbox"/> By Legal Messenger <input checked="" type="checkbox"/> <b>By Electronic CM/ECF</b> <input type="checkbox"/> By Overnight Express Mail <input type="checkbox"/> By Facsimile <input type="checkbox"/> By Email [by agreement of counsel] mpensabene@omm.com
<b>Jonathan Crawford</b> O'MELVENY & MYERS LLP 2765 Sand Hill Road Menlo Park, CA 94025  <i>Attorneys for Plaintiff Telebuyer LLC</i>	<input type="checkbox"/> By United States Mail <input type="checkbox"/> By Legal Messenger <input checked="" type="checkbox"/> <b>By Electronic CM/ECF</b> <input type="checkbox"/> By Overnight Express Mail <input type="checkbox"/> By Facsimile <input type="checkbox"/> By Email [by agreement of counsel] jcrawford@omm.com

October 23, 2014

By: s/Richard G. Frenkel

Richard G. Frenkel

LATHAM & WATKINS LLP

# **EXHIBIT A**



INTERNATIONAL  
COMPUTER SCIENCE  
INSTITUTE

Current users [login here](#)

Search...

[About ICSI](#)

[People](#)

[Research Areas](#)

[Projects](#)

[Publications](#)

[Visiting](#)

[News and Events](#)

[Blog](#)

## Scott Shenker



**Director, Research Initiatives**  
**Chief Scientist**

shenker @ icsi.berkeley.edu

Scott Shenker is a professor in the Electrical Engineering and Computer Sciences Department at UC Berkeley. He is also the chief scientist and the leader of the New Initiatives Group at ICSI, where he was a founding member of the ICSI Center for Internet Research. He received his doctorate in physics in 1983 from the University of Chicago, and was later awarded an honorary doctorate from the same university in recognition of his contributions to Internet architecture. He has received both the SIGCOMM and IEEE Internet awards. Along with Martin Casado and Nick McKeown, he has been a leader in the movement toward Software-Defined Networking. In terms of commercial activities, he was co-founder (with Casado and McKeown), founding CEO, and chief scientist of Nicira.

Visit [Scott Shenker's Web site](#).

### Work Experience

Chief Scientist, ICSI, 2012-present  
Professor, UC Berkeley, 2004-present  
Adjunct Professor, UC Berkeley, 2002-2004  
Networking Group Leader, ICSI, 1998-present  
Adjunct Associate Professor, University of Southern California, 1995-2001  
Principal Scientist, PARC, Xerox Corporation, 1995-1998  
Member of Research Staff, PARC, Xerox Corporation, 1984-1995  
Postdoctoral Associate, Cornell University, Theoretical Physics, 1983-1984

### Education

PhD, Physics, University of Chicago, 1983  
ScB, Physics, Brown University, 1978

### Awards, Honors and Significant Achievements

Member, National Academy of Engineering, 2012  
Honorary Doctorate, University of Chicago, 2007  
IEEE Internet Award, 2006  
SIGCOMM Award, 2002  
Fellow, ACM and IEEE

[ICSI Home](#)

[Contact ICSI](#)

#### Quick Links

[ICSI Home](#)  
[Contact ICSI](#)

#### Research Areas

[AI](#)  
[Audio and Multimedia](#)

#### Projects

[AI](#)  
[Audio and Multimedia](#)

#### Visitor Information

[Visiting](#)  
[Directions](#)

#### Follow ICSI

[Twitter](#)  
[Facebook](#)

Board of Trustees	Networking and Security	Networking and Security	Accommodations	YouTube
Job Opportunities	Research Initiatives	Research Initiatives	Visa Process	
	Speech	Speech		
	Vision	Vision		

Copyright © 2012-2014 International Computer Science Institute (ICSI). All Rights Reserved.



# Scott Shenker

## Professor

### Research Areas

Internet Architecture, Software-Defined Networks, Datacenter Infrastructure, Large-Scale Distributed Systems, Game Theory and Economics  
[Operating Systems & Networking \(OSNT\)](#)  
[Security \(SEC\)](#)

### Research Centers

[Algorithms, Machines, and People Laboratory \(AMP\)](#)

### Selected Publications

- M. Zaharia, T. Das, H. Li, T. Hunter, S. Shenker, and I. Stoica, "[Discretized Streams: Fault-Tolerant Streaming Computation at Scale](#)," in *ACM Symposium on Operating Systems Principles*, 2013.
- R. S. Xin, J. Rosen, M. Zaharia, M. Franklin, S. Shenker, and I. Stoica, "[Shark: SQL and Rich Analytics at Scale](#)," EECS Department, University of California, Berkeley, Tech. Rep. UCB/EECS-2012-214, Nov. 2012.
- J. Feigenbaum and S. Shenker, "[Distributed algorithmic mechanism design: Recent results and future directions](#)," in *Proc. 6th Intl. Workshop on Discrete Algorithms and Methods for Mobile Computing and Communications*, New York, NY: ACM Press, 2002, pp. 1-13.
- S. Ratnasamy, P. Francis, M. Handley, R. M. Karp, and S. Shenker, "[A scalable content-addressable network](#)," in *Proc. ACM SIGCOMM 2001 Conf.: Applications, Technologies, Architectures, and Protocols for Computer Communications*, New York, NY: The Association for Computing Machinery, Inc., 2001, pp. 161-172.
- R. Braden, D. Clark, and S. Shenker, "[Integrated Services in the Internet Architecture: An Overview](#)," Internet Engineering Task Force, Tech. Rep. RFC 1633, June 1994.
- A. Demers, S. Keshav, and S. Shenker,

### Contact Information

415 Soda Hall  
tel: 510-643-3043

shenker@icsi

### Office Hours

Mondays 1:00-2:00pm  
(email before coming),  
Soda

### Assistant

Kattt Atchley  
465 Soda  
510-643-3499  
radlab-admin@eecs

### Research Support Officer

Damon Hinson  
634 Soda  
2-9982  
damonh@erso

Add .berkeley.edu to any  
incomplete email address.

[Personal  
Homepage](#)

[Projects](#)

[Publications](#)

[Dissertations](#)



"Analysis and simulation of a fair queueing algorithm," in *Proc. SIGCOMM '89 Symp. on Communications Architectures and Protocols*, New York, NY: ACM Press, 1989, pp. 1-12.

- A. Demers, D. Greene, C. Hauser, W. Irish, J. Larson, S. Shenker, H. Sturgis, D. Swinehart, and D. Terry, "Epidemic algorithms for replicated database maintenance," in *Proc. 6th Annual ACM Symp. on Principles of Distributed Computing*, F. B. Schneider, Ed., New York, NY: ACM Press, 1987, pp. 1-12.



EE CS

  


Make a Gift  
to EECS

#### Information for:

[Students](#)  
[Faculty](#)  
[Staff](#)

#### Support Services:

[Administrative](#)  
[Research](#)  
[Computing](#)  
[Facilities & Safety](#)  
[My EECS Info](#)

## Faculty Publications - Scott Shenker

### Books

- G. M. Voelker and S. Shenker, Eds., *Peer-to-Peer Systems III*, Lecture Notes in Computer Science: Theoretical Computer Science and General Issues, Vol. 3729, Berlin: Springer-Verlag, 2004. [\[abstract\]](#)

### Book chapters or sections

- R. H. Katz, G. Porter, S. Shenker, I. Stoica, and M. Tsai, "[COPS: Quality of service vs. any service at all \(Invited Paper\)](#)," in *Quality of Service: Proc. 13th Intl. Workshop on Quality of Service (IWQoS '05)*, H. de Meer and N. Bhatti, Eds., Lecture Notes in Computer Science, Vol. 3552, Berlin, Germany: Springer-Verlag, 2005, pp. 3-15.
- B. Y. Zhao, L. Huang, A. D. Joseph, and J. D. Kubiatowicz, "[Rapid mobility via type indirection](#)," in *Peer-to-Peer Systems III: Proc. 3rd Intl. Workshop (IPTPS '04). Revised Selected Papers*, G. M. Voelker and S. Shenker, Eds., Lecture Notes in Computer Science, Vol. 3279, Berlin, Germany: Springer-Verlag, 2005, pp. 64-74.
- B. T. Loo, R. Huebsch, I. Stoica, and J. M. Hellerstein, "[The case for a hybrid P2P search infrastructure](#)," in *Peer-to-Peer Systems III: Revised Selected Papers from the 3rd Intl. Workshop (IPTPS 2004)*, G. M. Voelker and S. Shenker, Eds., Lecture Notes in Computer Science, Vol. 3279, Berlin, Germany: Springer-Verlag, 2005, pp. 141-150.
- J. Elson, R. M. Karp, C. Papadimitriou, and S. Shenker, "[Global synchronization in sensornets](#)," in *LATIN 2004: Theoretical Informatics--Proc. 6th Latin American Symp.*, M. Farach-Colton, Ed., Lecture Notes in Computer Science, Vol. 2976, Berlin, Germany: Springer-Verlag, 2004, pp. 609-624.
- M. Harren, J. M. Hellerstein, R. Huebsch, B. T. Loo, S. Shenker, and I. Stoica, "[Complex queries in DHT-based peer-to-peer networks](#)," in *Peer-to-Peer Systems: Proc. 1st Intl. Workshop (IPTPS '02). Revised Papers*, P. Druschel, F. Kaashoek, and A. Rowstron, Eds., Lecture Notes in Computer Science, Vol. 2429, Berlin, Germany: Springer-Verlag, 2002, pp. 242-250.
- S. Ratnasamy, M. Handley, R. M. Karp, and S. Shenker, "[Application-level multicast using content-addressable networks](#)," in *Networked Group Communication: Proc. 3rd Intl. COST264 Workshop (NGC 2001)*, J. Crowcroft and M. Hofmann, Eds., Lecture Notes in Computer Science, Vol. 2233, Berlin, Germany: Springer-Verlag, 2001, pp. 14-29.

### Articles in journals or magazines

- M. Zaharia, M. Chowdhury, T. Das, A. Dave, J. Ma, J. McCauley, M.

- Franklin, S. Shenker, and I. Stoica, "[Fast and Interactive Analytics Over Hadoop Data with Spark](#)," *USENIX ;login:*, vol. 37, no. 4, pp. 45-51, Aug. 2012.
- M. Zaharia, W. J. Bolosky, K. Curtis, A. Fox, D. A. Patterson, S. Shenker, I. Stoica, R. M. Karp, and T. Sittler, "[Faster and More Accurate Sequence Alignment with SNAP](#)," *CoRR*, vol. abs/1111.5572, 2011.
  - B. Hindman, A. Konwinski, M. Zaharia, A. Ghodsi, A. D. Joseph, R. H. Katz, S. Shenker, and I. Stoica, "[Mesos: Flexible Resource Sharing for the Cloud](#)," *;login:*, vol. 36, no. 4, pp. 37-45, Aug. 2011.
  - T. Koponen, S. Shenker, H. Balakrishnan, N. Feemster, I. Ganichev, A. Ghodsi, P. B. Godfrey, N. McKeown, G. Parulkar, B. Raghavan, J. Rexford, S. Arianfar, and D. Kuptsov, "[Editorial: Architecting for Innovation](#)," *ACM SIGCOMM Computer Communications Review*, vol. 41, no. 3, July 2011.
  - I. Ganichev, B. Dai, P. B. Godfrey, and S. Shenker, "[YAMR: Yet Another Multipath Routing Protocol](#)," *ACM SIGCOMM Computer Communication Review*, vol. 40, no. 5, Oct. 2010.
  - P. B. Godfrey, M. Schapira, A. Zohar, and S. Shenker, "[Incentive Compatibility and Dynamics of Congestion Control](#)," *ACM SIGMETRICS Performance Evaluation Review*, vol. 36, no. 1, pp. 95-106, June 2010.
  - M. Caesar, M. Casado, T. Koponen, J. Rexford, and S. Shenker, "[Dynamic Route Recomputation Considered Harmful](#)," *Computer Communication Review*, vol. 40, no. 2, April 2010.
  - M. Walfish, M. Vutukuru, H. Balakrishnan, D. Karger, and S. Shenker, "[DDoS Defense by Offense](#)," *ACM Transactions on Computer Systems*, vol. 28, no. 3, March 2010.
  - M. Casado, M. J. Freedman, J. Petit, J. Luo, N. Gude, N. McKeown, and S. Shenker, "[Rethinking Enterprise Network Control](#)," *IEEE/ACM Transactions on Networking*, vol. 17, no. 4, pp. 1270-1283, Aug. 2009.
  - L. Tang, J. Li, Y. Li, and S. Shenker, "An Investigation of the Internet's IP-Layer Connectivity," *Computer Communications*, vol. 32, no. 5, pp. 913-926, March 2009.
  - N. Gude, T. Koponen, J. Pettit, B. Pfaff, M. Casado, N. McKeown, and S. Shenker, "[NOX: Towards an Operating System for Networks](#)," *ACM SIGCOMM Computer Communications Review*, vol. 38, no. 3, pp. 105-110, July 2008.
  - P. Levis, E. Brewer, D. E. Culler, D. Gay, S. Madden, N. Patel, J. Polastre, S. Shenker, Szewczyk, and A. Woo, "[The emergence of a networking primitive in wireless sensor networks](#)," *Communications of the ACM*, vol. 51, no. 7, pp. 99-106, July 2008.
  - N. McKeown, T. Anderson, H. Balakrishnan, G. Parulkar, L. Peterson, J. Rexford, S. Shenker, and J. Turner, "[OpenFlow: Enabling innovation in campus networks](#)," *ACM SIGCOMM Computer Communication Review*, vol. 38, no. 2, pp. 69-74, April 2008.
  - B. Chun, P. Maniatis, S. Shenker, and J. D. Kubiatowicz, "[Attested append-only memory: Making adversaries stick to their word](#)," *ACM SIGOPS Operating Systems Review*, vol. 41, no. 6, pp. 189-204, Dec. 2007.
  - M. Casado, M. J. Freedman, J. Pettit, J. Luo, N. McKeown, and S. Shenker, "[Ethane: Taking control of the enterprise](#)," *ACM SIGCOMM Computer Communication Review*, vol. 37, no. 4, pp. 1-12, Oct. 2007.
  - C. T. Ee, V. Ramachandran, B. G. Chun, K. Lakshminarayanan, and S. Shenker, "[Resolving inter-domain policy disputes](#)," *ACM SIGCOMM Computer Communication Review*, vol. 37, no. 4, pp. 157-168, Oct. 2007.
  - K. Lakshminarayanan, M. Caesar, M. Rangan, T. Anderson, S. Shenker,

- and I. Stoica, "[Achieving convergence-free routing using failure-carrying packets](#)," *ACM SIGCOMM Computer Communication Review*, vol. 37, no. 4, pp. 241-252, Oct. 2007.
- T. Koponen, M. Chawla, B. G. Chun, A. Ermolinskiy, K. H. Kim, S. Shenker, and I. Stoica, "[A data-oriented \(and beyond\) network architecture](#)," *ACM SIGCOMM Computer Communication Review*, vol. 37, no. 4, pp. 181-192, Oct. 2007.
  - M. Feldman, J. Chuang, I. Stoica, and S. Shenker, "[Hidden-Action in Network Routing](#)," *IEEE J. on Selected Areas in Communications*, vol. 25, no. 6, pp. 1161-1172, Aug. 2007.
  - A. Tavakoli, D. C. Chu, J. M. Hellerstein, P. Levis, and S. Shenker, "[A declarative sensornet architecture](#)," *ACM SIGBED Review: Special Issue on Wireless Sensor Network Architecture*, vol. 4, no. 3, pp. 55-60, April 2007.
  - A. Tavakoli, P. Dutta, J. Jeong, S. Kim, J. Ortiz, D. E. Culler, P. Levis, and S. Shenker, "[A modular sensornet architecture: Past, present, and future directions](#)," *ACM SIGBED Review: Special Issue on the Workshop on Wireless Sensor Network Architecture*, vol. 4, no. 3, pp. 49-54, April 2007.
  - X. F. Jiang, J. Taneja, J. Ortiz, A. Tavakoli, P. Dutta, J. Jeong, D. E. Culler, P. Levis, and S. Shenker, "[An architecture for energy management in wireless sensor networks](#)," *ACM SIGBED Review: Special Issue on the Workshop on Wireless Sensor Network Architecture*, vol. 4, no. 3, pp. 31-36, April 2007.
  - E. Kohler, J. Li, V. Paxson, and S. Shenker, "[Observed structure of addresses in IP traffic](#)," *IEEE/ACM Trans. on Networking*, vol. 14, no. 6, pp. 1207-1218, Dec. 2006.
  - S. Zhuang, K. Lai, I. Stoica, R. H. Katz, and S. Shenker, "[Host mobility using an Internet indirection infrastructure](#)," *Wireless Networks*, vol. 11, no. 6, pp. 741-756, Nov. 2005.
  - S. Rhea, B. Godfrey, B. Karp, J. D. Kubiawicz, S. Ratnasamy, S. Shenker, I. Stoica, and H. Yu, "[OpenDHT: A public DHT service and its uses](#)," *ACM SIGCOMM Computer Communication Review*, vol. 35, no. 4, pp. 73-84, Oct. 2005.
  - J. Feigenbaum, C. Papadimitriou, R. Sami, and S. Shenker, "[A BGP-based mechanism for lowest-cost routing](#)," *Distributed Computing*, vol. 18, no. 1, pp. 61-72, July 2005.
  - J. M. Hellerstein, V. Paxson, L. Peterson, T. Roscoe, S. Shenker, and D. Wetherall, "[The network oracle](#)," *Bulletin of the IEEE Computer Society Technical Committee on Data Engineering*, vol. 28, no. 1, pp. 3-10, March 2005.
  - I. Stoica, D. Adkins, S. Zhuang, S. Shenker, and S. Surana, "[Internet indirection infrastructure](#)," *IEEE/ACM Trans. Networking*, vol. 12, no. 2, pp. 205-218, April 2004.
  - R. M. Karp, S. Shenker, and C. Papadimitriou, "[A simple algorithm for finding frequent elements in streams and bags](#)," *ACM Trans. Database Systems*, vol. 28, no. 1, pp. 51-55, March 2003.
  - A. Akella, S. Seshan, R. M. Karp, S. Shenker, and C. Papadimitriou, "[Selfish behavior and stability of the Internet: A game-theoretic analysis of TCP](#)," *ACM SIGCOMM Computer Communication Review: Proc. 2002 SIGCOMM Conf.*, vol. 32, no. 4, pp. 117-130, Oct. 2002.
  - Y. Zhang, L. Breslau, V. Paxson, and S. Shenker, "[On the characteristics and origins of Internet flow rates](#)," *ACM SIGCOMM Computer Communication Review*, vol. 32, no. 4, pp. 309-322, Oct. 2002.
  - R. Mahajan, S. M. Bellovin, S. Floyd, J. Ioannidis, V. Paxson, and S. Shenker, "[Controlling high bandwidth aggregates in the network](#)," *ACM*

- SIGCOMM Computer Communication Review*, vol. 32, no. 3, pp. 62-73, July 2002.
- W. Willinger, R. Govindan, S. Jamin, V. Paxson, and S. Shenker, "[Scaling phenomena in the Internet: Critically examining criticality](#)," *Proc. National Academy of Sciences of the USA*, vol. 99, no. 1, pp. 2573-2580, Feb. 2002.
  - R. Mahajan, S. M. Bellovin, S. Floyd, J. Ioannidis, V. Paxson, and S. Shenker, "[Aggregate congestion control](#)," *ACM SIGCOMM Computer Communication Review*, vol. 32, no. 1, pp. 69-69, Jan. 2002.
  - S. Ratnasamy, P. Francis, M. Handley, R. M. Karp, and S. Shenker, "[A scalable content-addressable network](#)," *ACM SIGCOMM Computer Communication Review: Proc. 2001 SIGCOMM Conf.*, vol. 31, no. 4, pp. 161-172, Oct. 2001.
  - J. Feigenbaum, C. Papadimitriou, and S. Shenker, "[Sharing the cost of multicast transmissions](#)," *J. Computer and System Sciences: Special Issue on Internet Algorithms*, vol. 63, no. 1, pp. 21-41, Aug. 2001.

## Articles in conference proceedings

---

- R. Mittal, J. Sherry, S. Ratnasamy, and S. Shenker, "[How to Improve Your Network Performance by Asking Your Provider for Worse Service](#)," in *Proceedings of the Twelfth ACM Workshop on Hot Topics in Networks*, HotNets-XII, New York, NY, USA: ACM, 2013, pp. 25:1--25:7.
- M. Zaharia, T. Das, H. Li, T. Hunter, S. Shenker, and I. Stoica, "[Discretized Streams: Fault-Tolerant Streaming Computation at Scale](#)," in *ACM Symposium on Operating Systems Principles*, 2013.
- H. Li, A. Ghodsi, M. Zaharia, E. Baldeschwieler, S. Shenker, and I. Stoica, "[Tachyon: Memory Throughput I/O for Cluster Computing Frameworks](#)," in *7th Workshop on Large-Scale Distributed Systems and Middleware*, 2013.
- J. Liu, A. Panda, A. Singla, B. Godfrey, M. Schapira, and S. Shenker, "[Ensuring Connectivity via Data Plane Mechanisms](#)," in *Proceedings of the 10th USENIX Symposium on Networked Systems Design and Implementation (NSDI '13)*, 2013, pp. 113-126.
- D. Gupta, A. Segal, A. Panda, G. Segev, M. Schapira, J. Feigenbaum, J. Rexford, and S. Shenker, "[A New Approach to Interdomain Routing Based on Secure Multi-Party Computation](#)," in *Proceedings of the 11th ACM Workshop on Hot Topics in Networks (HotNets XI)*, 2012, pp. 37-42.
- B. Raghavan, T. Koponen, A. Ghodsi, M. Casado, S. Ratnasamy, and S. Shenker, "[Software-Defined Internet Architecture: Decoupling Architecture from Infrastructure](#)," in *Proceedings of the 11th ACM Workshop on Hot Topics in Networks (HotNets XI)*, 2012, pp. 43-48.
- M. Alizadeh, S. Yang, S. Katti, N. McKeown, B. Prabhakar, and S. Shenker, "[Deconstructing Datacenter Packet Transport](#)," in *Proceedings of the 11th ACM Workshop on Hot Topics in Networks (HotNets XI)*, 2012, pp. 133-138.
- B. Raghavan, T. Koponen, M. Casado, A. Ghodsi, S. Ratnasamy, and S. Shenker, "[Software-Defined Internet Architecture](#)," in *Proceedings of the ACM Workshop on Hot Topics in Networks (HotNets-XII)*, 2012.
- M. Casado, T. Koponen, S. Shenker, and A. Tootoonchian, "[Fabric: A Retrospective on Evolving SDN](#)," in *Proceedings of the ACM SIGCOMM Workshop on Hot Topics in Software Defined Networking (HotSDN)*, 2012.
- J. Feigenbaum, B. Godfrey, A. Panda, M. Schapira, S. Shenker, and A. Singla, "[Brief Announcement: On the Resilience of Routing Tables](#)," in *Proceedings of the 31st Annual ACM SIGACT-SIGOPS Symposium on*



*Principles of Distributed Computing (PODC '12)*, 2012, pp. 237-238.

- J. Feigenbaum, B. Godfrey, A. Panda, M. Schapira, S. Shenker, and A. Singla, "[On the Resilience of Routing Tables](#)," in *Proceedings of the 31st Annual ACM SIGACT-SIGOPS Symposium on Principles of Distributed Computing (PODC '12)*, 2012.
- S. Shenker, "[Software-Defined Networking: History, Hype, and Hope](#)," in *Proceedings of the Conference on Large-Scale Distributed Systems and Middleware (LADIS 2012)*, 2012.
- G. Ananthanarayanan, A. Ghodsi, S. Shenker, and I. Stoica, "[Why Let Resources Idle? Aggressive Cloning of Jobs with Dolly](#)," in *Proceedings of the 4th USENIX Workshop on Hot Topics in Cloud Computing (HotCloud '12)*, 2012.
- M. Zaharia, T. Das, H. Li, S. Shenker, and I. Stoica, "[Discretized Streams: An Efficient and Fault-Tolerant Model for Stream Processing on Large Clusters](#)," in *Proceedings of the 4th USENIX Conference on Hot Topics in Cloud Computing (HotCloud '12)*, 2012.
- L. Martignoni, P. Poosankam, M. Zaharia, J. Han, S. McCamant, D. Song, V. Paxson, A. Perrig, S. Shenker, and I. Stoica, "[Cloud Terminal: Secure Access to Sensitive Applications from Untrusted Systems.](#)," in *Proceedings of USENIX Annual Technical Conference*, 2012.
- C. Engle, A. Lupher, R. S. Xin, M. Zaharia, M. Franklin, S. Shenker, and I. Stoica, "[Shark: Fast Data Analysis Using Coarse-grained Distributed Memory](#)," in *Proceedings of the ACM SIGMOD/PODS Conference*, 2012.
- G. Ananthanarayanan, A. Ghodsi, A. Wang, D. Borthakur, S. Kandula, S. Shenker, and I. Stoica, "[PACMan: Coordinated Memory Caching for Parallel Jobs](#)," in *Proceedings of the 9th USENIX Symposium on Networked Systems Design and Implementation (NSDI '12)*, 2012.
- M. Zaharia, M. Chowdhury, T. Das, A. Dave, J. Ma, M. McCauley, M. J. Franklin, S. Shenker, and I. Stoica, "[Resilient Distributed Datasets: A Fault-Tolerant Abstraction for In-Memory Cluster Computing](#)," in *Proceedings of the 9th USENIX Symposium on Networked Systems Design and Implementation (NSDI 2012)*, 2012.
- J. Liu, S. Shenker, M. Schapira, and B. Yang, "[Data-Driven Network Connectivity](#)," in *Proceedings of the 10th ACM Workshop on Hot Topics in Networks (HotNets-X)*, 2011.
- A. Ghodsi, T. Koponen, B. Raghavan, S. Shenker, A. Singla, and J. Wilcox, "[Intelligent Design Enables Architectural Evolution](#)," in *Proceedings of the 10th ACM Workshop on Hot Topics in Networks (HotNets-X)*, 2011.
- A. Ghodsi, T. Koponen, B. Raghavan, S. Shenker, A. Singla, and J. Wilcox, "[Information-Centric Networking: Seeing the Forest for the Trees](#)," in *Proceedings of the 10th ACM Workshop on Hot Topics in Networks (HotNets-X)*, 2011.
- A. Ghodsi, T. Koponen, J. Rajahalme, P. Sarolahti, and S. Shenker, "[Naming in Content-Oriented Architectures](#)," in *Proceedings of the ACM SIGCOMM Workshop on Information-Centric Networking (ICN 2011)*, 2011.
- S. Arianfar, T. Koponen, B. Raghavan, and S. Shenker, "[On Preserving Privacy in Information-Centric Networks](#)," in *Proceedings of the ACM SIGCOMM Workshop on Information-Centric Networking (ICN-2011)*, 2011, pp. 19-24.
- M. Zaharia, B. Hindman, A. Konwinski, A. Ghodsi, A. D. Joseph, R. Katz, S. Shenker, and I. Stoica, "[The Datacenter Needs an Operating System](#)," in *Proceedings of the Third USENIX Workshop on Hot Topics in Cloud Computing (Hot Cloud '11)*, 2011.
- G. Ananthanarayanan, A. Ghodsi, S. Shenker, and I. Stoica, "[Disk-Locality](#)

- in [Datacenter Computing Considered Irrelevant](#)," in *Proceedings of the 13th Workshop on Hot Topics in Operating Systems (HotOS XIII)*, 2011.
- B. Hindman, A. Konwinski, M. Zaharia, A. Ghodsi, A. D. Joseph, R. Katz, S. Shenker, and I. Stoica, "[Mesos: A Platform for Fine-Grained Resource Sharing in the Data Center](#)," in *Proceedings of the 8th USENIX Symposium on Networked Systems Design and Implementation (NSDI 2011)*, 2011.
  - A. Ghodsi, M. Zaharia, B. Hindman, A. Konwinski, S. Shenker, and I. Stoica, "[Dominant Resource Fairness: Fair Allocation of Multiple Resources in Datacenters](#)," in *Proceedings of the 8th USENIX Symposium on Networked Systems Design and Implementation (NSDI 2011)*, 2011, pp. 323-336.
  - M. Casado, T. Koponen, R. Ramanathan, and S. Shenker, "[Virtualizing the Network Forwarding Plane](#)," in *Proceedings of the Workshop on Programmable Routers for Extensible Services of Tomorrow (PRESTO 2010)*, 2010.
  - T. Koponen, M. Casado, N. Gude, J. Stribling, L. Poutievski, M. Zhu, R. Ramanathan, Y. Iwata, H. Inoue, T. Hama, and S. Shenker, "[Onix: A Distributed Control Platform for Large-scale Production Networks](#)," in *Proceedings of the 9th USENIX Symposium on Operating Systems Design and Implementation (OSDI 10)*, 2010, pp. 351-364.
  - B. Heller, D. Erickson, N. McKeown, R. Griffith, I. Ganichev, S. Whyte, K. Zarifis, D. Moon, S. Shenker, and S. Stuart, "[Ripcord: A Modular Platform for Data Center Networking](#)," in *Proceedings of ACM Special Interest Group on Data Communications Conference (SIGCOMM 2010)*, 2010, pp. 457-458.
  - M. Zaharia, M. Chowdhury, M. Franklin, S. Shenker, and I. Stoica, "[Spark: Cluster Computing with Working Sets](#)," in *Proceedings of the 2nd USENIX Conference on Hot Topics in Cloud Computing (HotCloud'10)*, 2010.
  - M. Zaharia, D. Borthakur, J. Sen Sarma, K. Elmeleegy, S. Shenker, and I. Stoica, "[Delay Scheduling: A Simple Technique for Achieving Locality and Fairness in Cluster Scheduling](#)," in *Proceedings of the Fifth European Conference on Computer Systems (EuroSys 2010)*, 2010, pp. 265-278.
  - A. Tavakoli, M. Casado, T. Koponen, and S. Shenker, "[Applying NOX to the Datacenter](#)," in *Proceedings of the 8th ACM Workshop on Hot Topics in Networks (HotNets-VIII)*, 2009.
  - A. Seehra, J. Naous, M. Walfish, D. Mazieres, A. Nicolosi, and S. Shenker, "[A Policy Framework for the Future Internet](#)," in *Proceedings of the 8th ACM Workshop on Hot Topics in Networks (HotNets-VIII)*, 2009.
  - B. Pfaff, J. Pettit, K. Amidon, M. Casado, T. Koponen, and S. Shenker, "[Extending Networking into the Virtualization Layer](#)," in *Proceedings of the 8th ACM Workshop on Hot Topics in Networks (HotNets-VIII)*, 2009.
  - T. L. Hinrichs, N. S. Gude, M. Casado, J. C. Mitchell, and S. Shenker, "[Practical Declarative Network Management](#)," in *Proceedings of the 1st ACM Workshop on Research on Enterprise Networking (WREN 2009)*, 2009, pp. 1-10.
  - A. Ermolinskiy, D. Moon, B. Chun, and S. Shenker, "[Minuet: Rethinking Concurrency Control in Storage Area Networks](#)," in *Proceedings of the 7th USENIX Conf. on File and Storage Technologies (FAST '09)*, 2009, pp. 311-324.
  - B. Chun, P. Maniatis, S. Shenker, and J. D. Kubiatowicz, "[Tiered Fault Tolerance for Long-Term Integrity](#)," in *Proceedings of the 7th USENIX Conf. on File and Storage Technologies (FAST '09)*, 2009, pp. 267-282.
  - D. Moon, M. Casado, T. Koponen, and S. Shenker, "[Rethinking Packet Forwarding Hardware](#)," in *Proceedings of the ACM Special Interest Group on Data Communications Workshop on Hot Topics in Networks (HotNets-*

- VII), 2008, pp. 1-6.
- A. Ermolinskiy and S. Shenker, "[Reducing Transient Disconnectivity Using Anomaly-Cognizant Forwarding](#)," in *Proceedings of the 7th ACM Workshop on Hot Topics in Networks (HotNets-VII)*, 2008, pp. 91-96.
  - P. B. Godfrey, S. Shenker, and I. Stoica, "[Pathlet routing](#)," in *Proc. 7th ACM Workshop on Hot Topics in Networks (HotNets-VII)*, New York, NY: The Association for Computing Machinery, Inc., 2008, pp. 6 pg.
  - D. G. Andersen, H. Balakrishnan, N. Feamster, T. Koponen, D. Moon, and S. Shenker, "[Accountable Internet Protocol \(AIP\)](#)," in *Proceedings of the ACM Special Interest Group on Data Communications Conf. (SIGCOMM 2008)*, 2008, pp. 339-350.
  - A. Anand, A. Gupta, A. Akella, S. Seshan, and S. Shenker, "[Packet Caches on Routers: The Implications of Universal Redundant Traffic Elimination](#)," in *Proceedings of the ACM Special Interest Group on Data Communications Conf. (SIGCOMM 2008)*, 2008, pp. 219-230.
  - B. Chun, P. Maniatis, and S. Shenker, "[Diverse Replication for Single-Machine Byzantine-Fault Tolerance](#)," in *Proceedings of USENIX Annual Technical Conf. (ATC '08)*, 2008, pp. 287-292.
  - P. Dutta, D. E. Culler, and S. Shenker, "[Asynchronous neighbor discovery: Finding needles of connectivity in haystacks of time](#)," in *Proc. 2008 Intl. Conf. on Information Processing in Sensor Networks (IPSN '08)*, Los Alamitos, CA: IEEE Computer Society, 2008, pp. 531-532.
  - M. Demmer, K. Fall, T. Koponen, and S. Shenker, "[Towards a modern communications API](#)," in *Proc. 6th Workshop on Hot Topics in Networks (HotNets-VI)*, New York, NY: The Association for Computing Machinery, Inc., 2007, pp. 7 pg.
  - D. Anderson, H. Balakrishnan, N. Feamster, T. Koponen, D. Moon, and S. Shenker, "[Holding the Internet accountable](#)," in *Proc. 6th Workshop on Hot Topics in Networks (HotNets-VI)*, New York, NY: The Association for Computing Machinery, Inc., 2007, pp. 7 pg.
  - P. Dutta, D. E. Culler, and S. Shenker, "[Procrastination might lead to a longer and more useful life](#)," in *Proc. 6th Workshop on Hot Topics in Networks (HotNets-VI)*, New York, NY: The Association for Computing Machinery, Inc., 2007, pp. 7 pg.
  - D. C. Chu, L. Popa, A. Tavakoli, J. M. Hellerstein, P. Levis, S. Shenker, and I. Stoica, "[The design and implementation of a declarative sensor network system](#)," in *Proc. 5th Intl. Conf. on Embedded Networked Sensor Systems (SynSys '07)*, New York, NY: The Association for Computing Machinery, Inc., 2007, pp. 175-188.
  - S. Kim, R. Fonseca, P. Dutta, A. Tavakoli, D. E. Culler, P. Levis, S. Shenker, and I. Stoica, "[Flush: A reliable bulk transport protocol for multihop wireless networks](#)," in *Proc. 5th Intl. Conf. on Embedded Networked Sensor Systems (SynSys '07)*, New York, NY: The Association for Computing Machinery, Inc., 2007, pp. 351-365.
  - K. Argyraki, P. Maniatis, O. Irzak, S. Ashish, and S. Shenker, "[Loss and delay accountability for the Internet](#)," in *Proc. 15th IEEE Intl. Conf. on Network Protocols (ICNP 2007)*, Piscataway, NJ: IEEE Press, 2007, pp. 194-205.
  - B. Chun, P. Maniatis, S. Shenker, and J. D. Kubiatowicz, "[Attested append-only memory: Making adversaries stick to their word](#)," in *Proc. 21st ACM SIGOPS Symp. on Operating Systems Principles (SOSP '07)*, New York, NY: The Association for Computing Machinery, Inc., 2007, pp. 189-204.
  - M. Casado, M. J. Freedman, J. Pettit, J. Luo, N. McKeown, and S. Shenker, "[Ethane: Taking control of the enterprise](#)," in *Proc. 2007 Conf. on*



*Applications, Technologies, Architectures, and Protocols for Computer Communications (SIGCOMM '07)*, New York, NY: The Association for Computing Machinery, Inc., 2007, pp. 1-12.

- C. T. Ee, V. Ramachandran, B. G. Chun, K. Lakshminarayanan, and S. Shenker, "[Resolving inter-domain policy disputes](#)," in *Proc. 2007 Conf. on Applications, Technologies, Architectures, and Protocols for Computer Communications (SIGCOMM '07)*, New York, NY: The Association for Computing Machinery, Inc., 2007, pp. 157-168.
- K. Lakshminarayanan, M. Caesar, M. Rangan, T. Anderson, S. Shenker, and I. Stoica, "[Achieving convergence-free routing using failure-carrying packets](#)," in *Proc. 2007 ACM SIGCOMM Conf. on Applications, Technologies, Architectures, and Protocols for Computer Communications (SIGCOMM '07)*, New York, NY: The Association for Computing Machinery, Inc., 2007, pp. 241-252.
- T. Koponen, M. Chawla, B. G. Chun, A. Ermolinskiy, K. H. Kim, S. Shenker, and I. Stoica, "[A data-oriented \(and beyond\) network architecture](#)," in *Proc. 2007 ACM SIGCOMM Conf. on Applications, Technologies, Architectures, and Protocols for Computer Communications (SIGCOMM '07)*, New York, NY: The Association for Computing Machinery, Inc., 2007, pp. 181-192.
- X. Jiang, J. Taneja, J. Ortiz, A. Tavakoli, P. Dutta, J. Jeong, D. E. Culler, P. Levis, and S. Shenker, "An architecture for energy management in wireless sensor networks," in *Proc. 2007 Intl. Workshop on Wireless Sensor Network Architecture (WWSNA '07)*, 2007.
- A. Tavakoli, D. Chu, J. M. Hellerstein, P. Levis, and S. Shenker, "A declarative sensor network architecture," in *Proc. 2007 Intl. Workshop on Wireless Sensor Network Architecture (WWSNA '07)*, 2007.
- A. Tavakoli, P. Dutta, J. Jeong, S. Kim, J. Ortiz, D. E. Culler, P. Levis, and S. Shenker, "A modular sensor network architecture: Past, present, and future directions," in *Proc. 2007 Intl. Workshop on Wireless Sensor Network Architecture (WWSNA '07)*, 2007.
- R. Fonseca, G. Porter, R. H. Katz, S. Shenker, and I. Stoica, "[X-Trace: A pervasive network tracing framework](#)," in *Proc. 4th USENIX Symp. on Networked Systems Design & Implementation (NSDI 2007)*, Berkeley, CA: USENIX Association, 2007, pp. 271-284.
- C. T. Ee, R. Fonseca, S. Kim, D. Moon, A. Tavakoli, D. E. Culler, S. Shenker, and I. Stoica, "[A modular network layer for sensor networks](#)," in *Proc. 7th USENIX Symp. on Operating Systems Design and Implementation (OSDI '06)*, Berkeley, CA: USENIX Association, 2006, pp. 249-262.
- M. Allman, E. Blanton, V. Paxson, and S. Shenker, "[Fighting coordinated attackers with cross-organizational information sharing](#)," in *Proc. 5th Workshop on Hot Topics in Networks (HotNets-V)*, New York, NY: The Association for Computing Machinery, Inc., 2006, pp. 121-126.
- D. M. Geels, G. D. Altekari, S. Shenker, and I. Stoica, "[Replay debugging for distributed applications](#)," in *Proc. 2006 USENIX Annual Technical Conference*, Berkeley, CA: USENIX Association, 2006, pp. 289-300.
- S. Rhea, B. Chun, J. D. Kubiatowicz, and S. Shenker, "[Fixing the embarrassing slowness of OpenDHT on PlanetLab](#)," in *Proc. 2nd USENIX Conf. on Real, Large Distributed Systems (WORLDS 2005)*, Vol. 2, Berkeley, CA: USENIX Association, 2005, pp. 25-30.
- J. Polastre, J. Hui, P. Levis, J. Zhao, D. E. Culler, S. Shenker, and I. Stoica, "[A unifying link abstraction for wireless sensor networks](#)," in *Proc. 3rd Intl. Conf. on Embedded Networked Sensor Systems (SynSys '05)*, New York, NY: The Association for Computing Machinery, Inc., 2005, pp. 76-89.
- S. Rhea, B. Godfrey, B. Karp, J. D. Kubiatowicz, S. Ratnasamy, S. Shenker,

- I. Stoica, and H. Yu, "[OpenDHT: A public DHT service and its uses](#)," in *Proc. 2005 Conf. on Applications, Technologies, Architectures, and Protocols for Computer Communications (SIGCOMM '05)*, New York, NY: The Association for Computing Machinery, Inc., 2005, pp. 73-84.
- Y. Chawathe, S. Ramabhadran, S. Ratnasamy, A. LaMarca, S. Shenker, and J. M. Hellerstein, "[A case study in building layered DHT applications](#)," in *Proc. 2005 Conf. on Applications, Technologies, Architectures, and Protocols for Computer Communications (SIGCOMM '05)*, New York, NY: The Association for Computing Machinery, Inc., 2005, pp. 97-108.
  - L. Subramanian, R. H. Katz, V. Roth, S. Shenker, and I. Stoica, "[Reliable broadcast in unknown fixed-identity networks](#)," in *Proc. 24th Annual ACM Symp. on Principles of Distributed Computing (PODC '05)*, New York, NY: The Association for Computing Machinery, Inc., 2005, pp. 342-351.
  - D. E. Culler, P. Dutta, C. T. Ee, R. Fonseca, J. Hui, P. Levis, J. Polastre, S. Shenker, I. Stoica, G. Tolle, and J. Zhao, "[Towards a sensor network architecture: Lowering the waistline](#)," in *Proc. 10th Workshop on Hot Topics in Operating Systems (HotOS X)*, Vol. 10, Berkeley, CA: USENIX Association, 2005, pp. 6 pg.
  - M. Feldman, J. Chuang, I. Stoica, and S. Shenker, "[Hidden-action in multi-hop routing](#)," in *Proc. 6th ACM Conf. on Electronic Commerce*, New York, NY: ACM Press, 2005, pp. 117-126.
  - R. Fonseca, S. Ratnasamy, J. Zhao, C. T. Ee, D. E. Culler, S. Shenker, and I. Stoica, "[Beacon vector routing: Scalable point-to-point routing in wireless sensor networks](#)," in *Proc. 2nd Symp. on Networked Systems Design & Implementation (NSDI '05)*, Berkeley, CA: USENIX Association, 2005, pp. 329-342.
  - R. Huebsch, B. Chun, J. M. Hellerstein, B. T. Loo, P. Maniatis, T. Roscoe, S. Shenker, I. Stoica, and A. R. Yumerefendi, "[The architecture of PIER: An Internet-scale query processor](#)," in *Proc. 2nd Biennial Conf. on Innovative Data Systems Research (CIDR 2005)*, VLDB Foundation, 2005, pp. 28-43.
  - B. T. Loo, J. M. Hellerstein, R. Huebsch, S. Shenker, and I. Stoica, "[Enhancing P2P file-sharing with an Internet-scale query processor](#)," in *Proc. 30th Intl. Conf. on Very Large Data Bases (VLDB '04)*, M. A. Nascimento, M. Ozsu, D. Kossmann, R. J. Miller, J. A. Blakeley, and K. B. Schiefer, Eds., Very Large Data Bases, San Francisco, CA: Morgan Kaufmann, 2004, pp. 432-443.
  - S. Ramabhadran, S. Ratnasamy, J. M. Hellerstein, and S. Shenker, "[Prefix hash tree \(Brief Announcement\)](#)," in *Proc. 23rd Annual ACM SIGACT-SIGOPS Symp. on Principles of Distributed Computing (PODC '04)*, New York, NY: The Association for Computing Machinery, Inc., 2004, pp. 368-368.
  - B. Chun, J. M. Hellerstein, R. Huebsch, S. R. Jeffery, B. T. Loo, S. Mardanbeigi, T. Roscoe, S. Rhea, S. Shenker, and I. Stoica, "[Querying at Internet scale \(Demonstration\)](#)," in *Proc. 2004 ACM SIGMOD Intl. Conf. on Management of Data (SIGMOD '04)*, New York, NY: The Association for Computing Machinery, Inc., 2004, pp. 935-936.
  - P. Levis, N. Patel, D. E. Culler, and S. Shenker, "[Best Paper Award: Trickle: A self-regulating algorithm for code propagation and maintenance in wireless sensor networks](#)," in *Proc. 1st Conf. on Networked Systems Design and Implementation (NSDI '04)*, Vol. 1, Berkeley, CA: USENIX Association, 2004, pp. 15-28.
  - L. Subramanian, V. Roth, I. Stoica, S. Shenker, and R. H. Katz, "[Best Student Paper Award: Listen and whisper: Security mechanisms for BGP](#)," in *Proc. 1st Symp. on Networked Systems Design and Implementation*,

- Berkeley, CA: USENIX Association, 2004, pp. 127-140.
- R. Huebsch, J. M. Hellerstein, N. Lanham, B. T. Loo, S. Shenker, and I. Stoica, "[Querying the Internet with PIER](#)," in *Proc. 29th Intl. Conf. on Very Large Databases (VLDB 2003)*, J. C. Freytag, P. C. Lockemann, S. Abiteboul, M. J. Carey, P. G. Selinger, and A. Heuer, Eds., Very Large Data Bases, VLDB Endowment, 2003, pp. 321-332.
  - A. Rao, C. Papadimitriou, S. Shenker, and I. Stoica, "[Geographic routing without location information](#)," in *Proc. 9th Annual Intl. Conf. on Mobile Computing and Networking (MOBICOM '03)*, New York, NY: The Association for Computing Machinery, Inc., 2003, pp. 96-108.
  - A. Fabrikant, A. Luthra, E. Maneva, C. Papadimitriou, and S. Shenker, "[On a network creation game](#)," in *Proc. 22nd Annual Symp. on Principles of Distributed Computing (PODC '03)*, New York, NY: The Association for Computing Machinery, Inc., 2003, pp. 347-351.
  - S. Ratnasamy, M. Handley, R. M. Karp, and S. Shenker, "[Topologically-aware overlay construction and server selection](#)," in *Proc. 21st Annual Joint Conf. of the IEEE Computer and Communications Societies (INFOCOM 2002)*, Vol. 3, Piscataway, NJ: IEEE Press, 2003, pp. 1190-1199.
  - S. Zhuang, K. Lai, I. Stoica, R. H. Katz, and S. Shenker, "[Host mobility using an Internet indirection infrastructure](#)," in *Proc. 1st Int. Conf. on Mobile Systems, Applications, and Services (MobiSys '03)*, Berkeley, CA: USENIX Association, 2003, pp. 129-144.
  - E. Kohler, J. Li, V. Paxson, and S. Shenker, "[Observed structure of addresses in IP traffic](#)," in *Proc. 2nd ACM SIGCOMM Workshop on Internet Measurement (IMW '02)*, New York, NY: The Association for Computing Machinery, Inc., 2002, pp. 253-266.
  - J. Feigenbaum and S. Shenker, "[Distributed algorithmic mechanism design: Recent results and future directions](#)," in *Proc. 6th Intl. Workshop on Discrete Algorithms and Methods for Mobile Computing and Communications*, New York, NY: ACM Press, 2002, pp. 1-13.
  - A. Akella, S. Seshan, R. M. Karp, S. Shenker, and C. Papadimitriou, "[Selfish behavior and stability of the Internet: A game-theoretic analysis of TCP](#)," in *Proc. 2002 Conf. on Applications, Technologies, Architectures, and Protocols for Computer Communications (SIGCOMM '02)*, New York, NY: The Association for Computing Machinery, Inc., 2002, pp. 117-130.
  - Y. Zhang, L. Breslau, V. Paxson, and S. Shenker, "[On the characteristics and origins of Internet flow rates](#)," in *Proc. 2002 Conf. on Applications, Technologies, Architectures, and Protocols for Computer Communications (SIGCOMM '02)*, New York, NY: The Association for Computing Machinery, Inc., 2002, pp. 309-322.
  - J. Feigenbaum, C. Papadimitriou, R. Sami, and S. Shenker, "[A BGP-based mechanism for lowest-cost routing](#)," in *Proc. 21st ACM Annual Symp. on Principles of Distributed Computing (PODC '02)*, New York, NY: The Association for Computing Machinery, Inc., 2002, pp. 173-182.
  - Y. Zhang, N. Duffield, V. Paxson, and S. Shenker, "[On the constancy of Internet path properties](#)," in *Proc. 1st ACM SIGCOMM Internet Measurement Workshop (IMW '01)*, V. Paxson, Ed., New York, NY: The Association for Computing Machinery, Inc., 2001, pp. 197-211.
  - S. Ratnasamy, P. Francis, M. Handley, R. M. Karp, and S. Shenker, "[A scalable content-addressable network](#)," in *Proc. ACM SIGCOMM 2001 Conf.: Applications, Technologies, Architectures, and Protocols for Computer Communications*, New York, NY: The Association for Computing Machinery, Inc., 2001, pp. 161-172.
  - R. M. Karp, E. Koutsoupias, C. Papadimitriou, and S. Shenker,

- "[Optimization problems in congestion control](#)," in *Proc. 41st Annual Symp. on Foundations of Computer Science (FOCS 2000)*, Los Alamitos, CA: IEEE Computer Society, 2000, pp. 66-74.
- R. M. Karp, C. Schindelhauer, S. Shenker, and B. Vocking, "[Randomized rumor spreading](#)," in *Proc. 41st Annual Symp. on Foundations of Computer Science (FOCS 2000)*, Los Alamitos, CA: IEEE Computer Society, 2000, pp. 565-574.
  - J. Feigenbaum, C. Papadimitriou, and S. Shenker, "[Sharing the cost of multicast transmissions](#)," in *Proc. 32nd Annual ACM Symp. on Theory of Computing (STOC '00)*, New York, NY: The Association for Computing Machinery, Inc., 2000, pp. 218-227.
  - A. Demers, S. Keshav, and S. Shenker, "[Analysis and simulation of a fair queueing algorithm](#)," in *Proc. SIGCOMM '89 Symp. on Communications Architectures and Protocols*, New York, NY: ACM Press, 1989, pp. 1-12.
  - A. Demers, D. Greene, C. Hauser, W. Irish, J. Larson, S. Shenker, H. Sturgis, D. Swinehart, and D. Terry, "[Epidemic algorithms for replicated database maintenance](#)," in *Proc. 6th Annual ACM Symp. on Principles of Distributed Computing*, F. B. Schneider, Ed., New York, NY: ACM Press, 1987, pp. 1-12.

## Technical Reports

---

- H. Li, A. Ghodsi, M. Zaharia, S. Shenker, and I. Stoica, "[Reliable, Memory Speed Storage for Cluster Computing Frameworks](#)," EECS Department, University of California, Berkeley, Tech. Rep. UCB/EECS-2014-135, June 2014. [[abstract](#)]
- G. Fanti, Y. Ben David, S. Benthall, E. Brewer, and S. Shenker, "[Rangzen: Circumventing Government-Imposed Communication Blackouts](#)," EECS Department, University of California, Berkeley, Tech. Rep. UCB/EECS-2013-128, July 2013. [[abstract](#)]
- C. Scott, A. Wundsam, S. Whitlock, A. Or, E. Huang, K. Zarifis, and S. Shenker, "[How Did We Get Into This Mess? Isolating Fault-Inducing Inputs to SDN Control Software](#)," EECS Department, University of California, Berkeley, Tech. Rep. UCB/EECS-2013-8, Feb. 2013. [[abstract](#)]
- M. Zaharia, T. Das, H. Li, T. Hunter, S. Shenker, and I. Stoica, "[Discretized Streams: A Fault-Tolerant Model for Scalable Stream Processing](#)," EECS Department, University of California, Berkeley, Tech. Rep. UCB/EECS-2012-259, Dec. 2012. [[abstract](#)]
- R. S. Xin, J. Rosen, M. Zaharia, M. Franklin, S. Shenker, and I. Stoica, "[Shark: SQL and Rich Analytics at Scale](#)," EECS Department, University of California, Berkeley, Tech. Rep. UCB/EECS-2012-214, Nov. 2012. [[abstract](#)]
- D. Haussler, D. A. Patterson, M. Diekhans, A. Fox, M. Jordan, A. D. Joseph, S. Ma, B. Paten, S. Shenker, T. Sittler, and I. Stoica, "[A Million Cancer Genome Warehouse](#)," EECS Department, University of California, Berkeley, Tech. Rep. UCB/EECS-2012-211, Nov. 2012. [[abstract](#)]
- S. Hasan, Y. Ben David, R. C. Scott, E. Brewer, and S. Shenker, "[Enabling Rural Connectivity with SDN](#)," EECS Department, University of California, Berkeley, Tech. Rep. UCB/EECS-2012-201, Oct. 2012. [[abstract](#)]
- B. Raghavan, T. Koponen, A. Ghodsi, V. Brajkovic, and S. Shenker, "[Making the Internet More Evolvable](#)," International Computer Science Institute, Tech. Rep. TR-12-011, Sep. 2012.
- R. C. Scott, A. Wundsam, K. Zarifis, and S. Shenker, "[What, Where, and](#)



When: [Software Fault Localization for SDN](#)," EECS Department, University of California, Berkeley, Tech. Rep. UCB/EECS-2012-178, July 2012.

[[abstract](#)]

- M. Zaharia, S. Katti, C. Grier, V. Paxson, S. Shenker, I. Stoica, and D. Song, "[Hypervisors as a Foothold for Personal Computer Security: An Agenda for the Research Community](#)," EECS Department, University of California, Berkeley, Tech. Rep. UCB/EECS-2012-12, Jan. 2012. [[abstract](#)]
- M. Zaharia, M. Chowdhury, T. Das, A. Dave, J. Ma, M. McCauley, M. Franklin, S. Shenker, and I. Stoica, "[Resilient Distributed Datasets: A Fault-Tolerant Abstraction for In-Memory Cluster Computing](#)," EECS Department, University of California, Berkeley, Tech. Rep. UCB/EECS-2011-82, July 2011. [[abstract](#)]
- A. Ghodsi, M. Zaharia, B. Hindman, A. Konwinski, S. Shenker, and I. Stoica, "[Dominant Resource Fairness: Fair Allocation of Multiple Resource Types](#)," EECS Department, University of California, Berkeley, Tech. Rep. UCB/EECS-2011-18, March 2011. [[abstract](#)]
- M. Casado, D. Erickson, I. A. Ganichev, R. Griffith, B. Heller, N. Mckeown, D. Moon, T. Koponen, S. Shenker, and K. Zarifis, "[Ripcord: A Modular Platform for Data Center Networking](#)," EECS Department, University of California, Berkeley, Tech. Rep. UCB/EECS-2010-93, June 2010. [[abstract](#)]
- A. Ermolinskiy, S. Katti, S. Shenker, L. L. Fowler, and M. McCauley, "[Towards Practical Taint Tracking](#)," EECS Department, University of California, Berkeley, Tech. Rep. UCB/EECS-2010-92, June 2010. [[abstract](#)]
- B. Hindman, A. Konwinski, M. Zaharia, A. Ghodsi, A. D. Joseph, R. H. Katz, S. Shenker, and I. Stoica, "[Mesos: A Platform for Fine-Grained Resource Sharing in the Data Center](#)," EECS Department, University of California, Berkeley, Tech. Rep. UCB/EECS-2010-87, May 2010. [[abstract](#)]
- A. Ghodsi, M. Zaharia, B. Hindman, A. Konwinski, S. Shenker, and I. Stoica, "[Dominant Resource Fairness: Fair Allocation of Heterogeneous Resources in Datacenters](#)," EECS Department, University of California, Berkeley, Tech. Rep. UCB/EECS-2010-55, May 2010. [[abstract](#)]
- M. Zaharia, N. M. M. Chowdhury, M. Franklin, S. Shenker, and I. Stoica, "[Spark: Cluster Computing with Working Sets](#)," EECS Department, University of California, Berkeley, Tech. Rep. UCB/EECS-2010-53, May 2010. [[abstract](#)]
- B. Hindman, A. Konwinski, M. Zaharia, A. Ghodsi, A. D. Joseph, S. Shenker, and I. Stoica, "[Nexus: A Common Substrate for Cluster Computing](#)," EECS Department, University of California, Berkeley, Tech. Rep. UCB/EECS-2009-158, Nov. 2009. [[abstract](#)]
- G. Ananthanarayanan, K. Heimerl, M. Zaharia, M. Demmer, T. Koponen, A. Tavakoli, S. Shenker, and I. Stoica, "[Enabling Innovation Below the Communication API](#)," UC Berkeley, Tech. Rep. UCB/EECS-2009-141, Oct. 2009.
- I. A. Ganichev, D. Bln, P. B. Godfrey, and S. Shenker, "[YAMR: Yet Another Multipath Routing Protocol](#)," EECS Department, University of California, Berkeley, Tech. Rep. UCB/EECS-2009-150, Oct. 2009. [[abstract](#)]
- G. Ananthanarayanan, K. Heimerl, M. Zaharia, M. Demmer, T. Koponen, A. Tavakoli, S. Shenker, and I. Stoica, "[Enabling Innovation Below the Communication API](#)," EECS Department, University of California, Berkeley, Tech. Rep. UCB/EECS-2009-141, Oct. 2009. [[abstract](#)]
- G. Ananthanarayanan, K. Heimerl, M. Zaharia, M. Demmer, T. Koponen, A. Tavakoli, S. Shenker, and I. Stoica, "[A New Communications API](#)," EECS Department, University of California, Berkeley, Tech. Rep. UCB/EECS-2009-84, May 2009. [[abstract](#)]

- M. Zaharia, D. Borthakur, J. Sen Sarma, K. Elmeleegy, S. Shenker, and I. Stoica, "[Job Scheduling for Multi-User MapReduce Clusters](#)," EECS Department, University of California, Berkeley, Tech. Rep. UCB/EECS-2009-55, April 2009. [[abstract](#)]
- A. Ermolinskiy and S. Shenker, "[Reducing Transient Disconnectivity using Anomaly-Cognizant Forwarding](#)," EECS Department, University of California, Berkeley, Tech. Rep. UCB/EECS-2008-120, Sep. 2008. [[abstract](#)]
- A. Ermolinskiy, D. Moon, B. Chun, and S. Shenker, "[Minuet: Rethinking Concurrency Control in Storage Area Networks](#)," EECS Department, University of California, Berkeley, Tech. Rep. UCB/EECS-2008-57, May 2008. [[abstract](#)]
- B. Chun, K. Chen, G. Lee, R. H. Katz, and S. Shenker, "[D3: Declarative Distributed Debugging](#)," EECS Department, University of California, Berkeley, Tech. Rep. UCB/EECS-2008-27, March 2008. [[abstract](#)]
- C. T. Ee, J. Lee, D. Maltz, S. Shenker, and L. Subramanian, "[Simplifying Access Control in Enterprise Networks](#)," EECS Department, University of California, Berkeley, Tech. Rep. UCB/EECS-2007-33, March 2007. [[abstract](#)]
- K. K. Lakshminarayanan, M. C. Caesar, M. Rangan, T. Anderson, S. Shenker, and I. Stoica, "[Achieving Convergence-Free Routing using Failure-Carrying Packets](#)," EECS Department, University of California, Berkeley, Tech. Rep. UCB/EECS-2007-28, Feb. 2007. [[abstract](#)]
- C. T. Ee, V. Ramachandran, B. Chun, K. Lakshminarayanan, and S. Shenker, "[Resolving Inter-Domain Policy Disputes](#)," EECS Department, University of California, Berkeley, Tech. Rep. UCB/EECS-2007-27, Feb. 2007. [[abstract](#)]
- J. K. Kannan, M. C. Caesar, I. Stoica, and S. Shenker, "[On the Consistency of DHT-Based Routing](#)," EECS Department, University of California, Berkeley, Tech. Rep. UCB/EECS-2007-22, Jan. 2007. [[abstract](#)]
- S. Kim, R. Fonseca, P. Dutta, A. Tavakoli, D. E. Culler, P. Levis, S. Shenker, and I. Stoica, "[Flush: A Reliable Bulk Transport Protocol for Multihop Wireless Network](#)," EECS Department, University of California, Berkeley, Tech. Rep. UCB/EECS-2006-169, Dec. 2006. [[abstract](#)]
- C. T. Ee, S. Shenker, and L. Subramanian, "[Saphenaea: Simplifying Configuration Using Classes](#)," EECS Department, University of California, Berkeley, Tech. Rep. UCB/EECS-2006-135, Oct. 2006. [[abstract](#)]
- D. C. Chu, L. Popa, A. Tavakoli, J. M. Hellerstein, P. Levis, S. Shenker, and I. Stoica, "[The Design and Implementation of A Declarative Sensor Network System](#)," EECS Department, University of California, Berkeley, Tech. Rep. UCB/EECS-2006-132, Oct. 2006. [[abstract](#)]
- C. T. Ee, V. Ramachandran, B. Chun, and S. Shenker, "[Resolving BGP Disputes](#)," EECS Department, University of California, Berkeley, Tech. Rep. UCB/EECS-2006-39, April 2006. [[abstract](#)]
- P. B. Godfrey, S. Shenker, and I. Stoica, "[Minimizing Churn in Distributed Systems](#)," EECS Department, University of California, Berkeley, Tech. Rep. UCB/EECS-2006-25, March 2006. [[abstract](#)]
- K. K. Lakshminarayanan, I. Stoica, S. Shenker, and J. Rexford, "[Routing as a Service](#)," EECS Department, University of California, Berkeley, Tech. Rep. UCB/EECS-2006-19, Feb. 2006. [[abstract](#)]
- R. Fonseca, G. M. Porter, R. H. Katz, S. Shenker, and I. Stoica, "[IP Options are not an option](#)," EECS Department, University of California, Berkeley, Tech. Rep. UCB/EECS-2005-24, Dec. 2005. [[abstract](#)]
- S. Sankararaman, B. Chun, C. Yatin, and S. Shenker, "[Key Consistency in DHTs](#)," EECS Department, University of California, Berkeley, Tech. Rep.

- UCB/EECS-2005-21, Nov. 2005. [[abstract](#)]
- P. B. Godfrey, S. Shenker, and I. Stoica, "[Minimizing Churn in Distributed Systems](#)," EECS Department, University of California, Berkeley, Tech. Rep. UCB/EECS-2005-12, Nov. 2005.
  - L. Subramanian, M. Caesar, C. T. Ee, M. Handley, M. Mao, S. Shenker, and I. Stoica, "[HLP: A Next Generation Inter-domain Routing Protocol](#)," EECS Department, University of California, Berkeley, Tech. Rep. UCB/CSD-04-1357, Oct. 2005. [[abstract](#)]
  - J. Kannan, B. Yang, S. Shenker, P. Sharma, S. Banerjee, S. Basu, and S. J. Lee, "[Smartseer: Continuous Queries over CiteSeer](#)," EECS Department, University of California, Berkeley, Tech. Rep. UCB/CSD-05-1371, Jan. 2005. [[abstract](#)]
  - L. Subramanian, R. H. Katz, V. Roth, S. Shenker, and I. Stoica, "[Reliable Broadcast in Unknown Fixed-Identity Networks](#)," EECS Department, University of California, Berkeley, Tech. Rep. UCB/CSD-04-1358, 2004. [[abstract](#)]
  - K. Lakshminarayanan, I. Stoica, and S. Shenker, "[Routing as a Service](#)," EECS Department, University of California, Berkeley, Tech. Rep. UCB/CSD-04-1327, 2004. [[abstract](#)]
  - J. K. Kannan, L. Subramanian, I. Stoica, S. Shenker, and R. Katz, "[Cooperative Containment of Fast Scanning Worms](#)," EECS Department, University of California, Berkeley, Tech. Rep. UCB/CSD-04-1359, 2004. [[abstract](#)]
  - K. Lakshminarayanan, I. Stoica, and S. Shenker, "[Building a Flexible and Efficient Routing Infrastructure: Need and Challenges](#)," EECS Department, University of California, Berkeley, Tech. Rep. UCB/CSD-03-1254, 2003. [[abstract](#)]
  - B. T. Loo, J. Hellerstein, R. Huebsch, S. Shenker, and I. Stoica, "[Measurement and Analysis of Ultrapeer-based P2P Search Networks](#)," EECS Department, University of California, Berkeley, Tech. Rep. UCB/CSD-03-1277, 2003. [[abstract](#)]
  - P. Levis, N. Patel, S. Shenker, and D. Culler, "[Trickle: A Self-Regulating Algorithm for Code Propagation and Maintenance in Wireless Sensor Networks](#)," EECS Department, University of California, Berkeley, Tech. Rep. UCB/CSD-03-1290, 2003. [[abstract](#)]
  - A. Rao, K. Lakshminarayanan, I. Stoica, and S. Shenker, "[Flexible and Robust Large Scale Multicast Using i3](#)," EECS Department, University of California, Berkeley, Tech. Rep. UCB/CSD-02-1187, June 2002. [[abstract](#)]
  - S. Zhuang, K. Lai, I. Stoica, R. Katz, and S. Shenker, "[Host Mobility Using an Internet Indirection Infrastructure](#)," EECS Department, University of California, Berkeley, Tech. Rep. UCB/CSD-02-1186, June 2002. [[abstract](#)]
  - Y. Zhang, V. Paxson, and S. Shenker, "[The Stationarity of Internet Path Properties: Routing, Loss, and Throughput](#)," AT&T Center for Internet Research at ICSI, Tech. Rep. ACIRI-May-2000, May 2000. [[abstract](#)]
  - R. Braden, D. Clark, and S. Shenker, "[Integrated Services in the Internet Architecture: An Overview](#)," Internet Engineering Task Force, Tech. Rep. RFC 1633, June 1994.
  - E. Friedman and S. Shenker, "[Learning by Distributed Automata](#)," EECS Department, University of California, Berkeley, Tech. Rep. UCB/ERL M92/101, 1992.

## Ph.D. Theses

- A. Ermolinskiy and S. Shenker, "[Design and Implementation of a Hypervisor-Based Platform for Dynamic Information Flow Tracking in a Distributed Environment](#)," EECS Department, University of California, Berkeley, Tech. Rep. UCB/EECS-2011-50, May 2011. [[abstract](#)]

## Masters Reports

---

- T. Das, Y. Zhong, I. Stoica, and S. Shenker, "[Adaptive Stream Processing using Dynamic Batch Sizing](#)," EECS Department, University of California, Berkeley, Tech. Rep. UCB/EECS-2014-133, June 2014. [[abstract](#)]





EE CS

  
[Make a Gift  
to EECS](#)**Information for:**[Students](#)  
[Faculty](#)  
[Staff](#)**Support Services:**[Administrative](#)  
[Research](#)  
[Computing](#)  
[Facilities & Safety](#)  
[My EECS Info](#)

## Ph.D. Dissertations - Scott Shenker

---

[An Architecture for Fast and General Data Processing on Large Clusters](#)

Matei Zaharia [2013]

[Design and Implementation of a Hypervisor-Based Platform for Dynamic Information Flow Tracking in a Distributed Environment](#)

Andrey Ermolinskiy [2011]

[Interdomain Multipath Routing](#)

Igor Anatolyevich Ganichev [2011]

[Routing Along DAGs](#)

Junda Liu [2011]

[A High-Fidelity Energy Monitoring and Feedback Architecture for Reducing Electrical Consumption in Buildings](#)

Xiaofan Fred Jiang [2010]

[Achieving Flexibility and Performance for Packet Forwarding and Data Center Management](#)

Daekyeong Moon [2010]

[Exploring a Centralized/Distributed Hybrid Routing Protocol for Low Power Wireless Networks and Large Scale Datacenters](#)

Arsalan Tavakoli [2009]

[Policies in Routing](#)

Cheng Tien Ee [2007]

[Decentralized Security Mechanisms for Routing Protocols](#)

Lakshminarayanan Subramanian [2005]

[A Scalable Content-Addressable Network](#)

Sylvia P. Ratnasamy [2002]